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EXAMINER

KNIGHT, DEREK DOUGLAS

ART UNIT	PAPER NUMBER
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3681

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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/555,728	Applicant(s) MARTIN, WILLIAM WESLEY	
	Examiner DEREK D. KNIGHT	Art Unit 3681	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 May 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/8/2008 and 8/14/2008</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 7-19, and 21-23, 26 are rejected under 35 U.S.C. 102(b) as being anticipated by **THOMAS (US 3,872,737)**.

Regarding **claim 1**: Thomas discloses a transmission system comprising first (21) and second (13) rotatable shafts, and means for transferring drive from one of the shafts to the other shaft comprising first (27) and second (29) gear wheels each rotatably mounted on the first shaft and having drive formations (52) formed thereon, a selector assembly (comprising annular flange (64) and the drive formations (52)) for selectively transmitting torque between the first shaft (21) and the first gear (27) wheel and between the first shaft and the second gear wheel (29), wherein the selector assembly comprises an actuator assembly (not shown, but inherent to the system) and first and second sets of engagement members (36 & 37) that are moveable into and out of engagement with the first and second gear wheels independently of each other, [said selector assembly being arranged such that when one of the gear wheels is selected by the first and second sets of engagement members and a driving force is transmitted, one of the first and second sets of engagement members drivingly engages the engaged gear wheel, and the other set of engagement members is then in an unloaded

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condition, wherein the actuator assembly is arranged to move the unloaded set of engagement members into driving engagement with the unengaged gear wheel to effect a gear change before the loaded set disengages the engaged gear wheel when performing accelerating upshifts and decelerating downshifts, and wherein when performing kickdown shifts the engagement members are arranged to disengage the engaged gear wheel in response to a brief torque interruption prior to the shift.]

Regarding **claim 2**: Thomas discloses a transmission system, wherein the selector assembly is arranged such that [when a braking force is transmitted the first set of engagement members drivingly engages the engaged gear wheel, and the second set of engagement members is in an unloaded condition, and when a driving force is transmitted the second set of engagement members drivingly engages the engaged gear wheel, and the second first set of engagement members is then in an unloaded condition.]

Regarding **claim 3**: Thomas discloses a transmission system, wherein the actuator assembly is arranged [to bias the loaded set of engagement members towards the unengaged gear wheel without disengaging the loaded set of engagement members from the engaged gear wheel.]

Regarding **claim 4**: Thomas discloses a transmission system, wherein the first and second sets of engagement members are arranged [to rotate, in use, with the first shaft.]

Regarding **claim 5**: Thomas discloses a transmission system, [wherein the first shaft is an input shaft and the second shaft is an output shaft and drive is transferred from the input shaft to the output shaft.]

Regarding Claim 7: THOMAS discloses the drive formations on the first and second gear wheels comprising a first and second groups of dogs (not numbered, but springs (54) are resting against the dog members) respectively. See Fig. 6 of THOMAS.

Regarding Claims 8 and 9: THOMAS discloses the first and second groups of dogs each comprising between two and eight dogs, and preferably three dogs, evenly distributed on the first and second gears respectively. See Fig. 6 of THOMAS.

Regarding Claim 10: THOMAS discloses the first and second sets of engagement members (36 & 37) comprising between two and eight members. See Fig. 13 of THOMAS.

Regarding Claim 11: THOMAS discloses the first and second sets of engagement members (36 & 37) comprising between two and four members (43); see Fig. 13 of THOMAS.

Regarding Claim 12: THOMAS discloses the first shaft (21) comprising keyways (41) arranged such that the first and second sets of engagement members can slide axially along the keyways and to radially restrain the positions of the sets of engagement members.

Regarding Claim 13: THOMAS discloses the cross-section of the keyways as slotted (splined).

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Regarding Claims 14 - 17, 19: THOMAS discloses the actuator assembly comprising at least one resiliently deformable means (47) arranged to move at least one of the first and second sets of engagement members into engagement with the first and second gear wheels when the engagement members are in unloaded conditions.

The at least one resiliently deformable means (47) is arranged to bias at least one of the first and second sets of engagement members (36 &37) towards the first or second gear wheel when the engagement members are drivingly engaged with a gear wheel.

The actuator assembly comprising first and second resiliently deformable means (47) connected to the first and second sets of engagement members (36 &37) respectively such that the first resiliently deformable means acts on the first set of engagement members and the second resiliently deformable means acts on the second set of engagement members. See Fig. 13 of THOMAS.

The resiliently deformable means (43) is a spring.

Regarding Claim 18: THOMAS discloses the members (43) of the first and / or second sets of engagement members (36 & 37) can perform limited axial movement relative to each other in the keyways.

Regarding Claim 21: THOMAS discloses the actuator assembly comprising a fork (66) that is arranged to engage the at least one resiliently deformable means (47) to move the at least one resiliently deformable means axially along the first shaft.

Regarding Claim 22: THOMAS discloses the drive formations (52) being arranged such that they do not extend beyond the outside diameter of the gear wheels.

Regarding Claim 23: THOMAS discloses the first and second groups of dogs each comprise three dogs; see Fig. 6 of THOMAS.

Regarding Claim 26: THOMAS discloses a method for performing a kickdown shift in a transmission system including first and second rotatable shafts, and means for transferring drive from one of the shafts to the other shaft including first and second gear wheels each rotatably mounted on the first shaft and having drive formations formed thereon, a selector assembly for selectively transmitting torque between the first shaft and the first gear wheel and between the first shaft and the second gear wheel, wherein the selector assembly includes an actuator assembly and first and second sets of engagement members that are moveable into and out of engagement with the first and second gear wheels independently of each other, said selector assembly being arranged such that one of the gear wheels is selected by the first and second sets of engagement members and a driving force is transmitted, one of the first and second sets of engagement members drivingly engages the engaged gear wheel, and the other set of engagement members is then in an unloaded condition, wherein the actuator assembly is arranged to move the unloaded set of engagement members into driving engagement with the unengaged gear wheel to effect a gear change, including briefly interrupting torque in the transmission to allow disengagement of the engaged gear wheel prior to the shift, and then selecting the unengaged gear wheel.

Regarding Claim 27: THOMAS discloses a transmission system including a first shaft, a first gear ratio having a first gear wheel rotatably mounted on the first shaft, a second gear ratio having a second gear wheel rotatably mounted on the first shaft, a

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selector assembly for selectively transmitting torque between the first shaft and the first gear wheel and for selectively transmitting torque between the first shaft and the second gear wheel, said selector being arranged to select from the following operational modes for the first and second gear wheels: lock the gear wheel for rotation with the first shaft in a clockwise direction and not lock in a counter-clockwise direction (see Fig. 3); lock the gear wheel for rotation with the first shaft in the counter-clockwise direction and not lock in the clockwise direction (Fig. 5); and lock the gear wheel for rotation with the first shaft in the clockwise and counter-clockwise directions (Fig. 4), [wherein when performing kickdown shifts the selector assembly is arranged to release the second gear wheel from rotation with the first shaft in response to a brief torque interruption prior to the selecting the first gear wheel.]

Regarding Claim 28: THOMAS discloses a transmission system, wherein the selector assembly is arranged to select the following operational mode with respect to the first and second gear wheels: the gear wheel is not locked for rotation with the first shaft in the clockwise or counter-clockwise directions (this is the neutral position).

Regarding Claim 29: THOMAS discloses a transmission system, wherein the selector assembly is arranged to [select the unengaged gear wheel whilst the engaged gear wheel is locked for rotation with the first shaft when performing accelerating upshifts and decelerating downshifts.]

Regarding Claim 30: THOMAS discloses a transmission system, wherein the selector assembly includes an actuator assembly and first and second sets of engagement members that are arranged to [selectively lock the first and second gear

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wheels for rotation with the first shaft, said selector assembly being arranged such that when a driving force is transmitted, one of the first and second sets of engagement members transmits torque between the engaged gear wheel and the first shaft, and the other set of engagement members is then in an unloaded condition.]

Regarding Claim 31: THOMAS discloses a transmission system, wherein the actuator assembly is arranged to [use the unloaded set of engagement members to select an unengaged gear ratio to effect a gear change.]

Regarding Claim 32: THOMAS discloses a transmission system, wherein selector assembly is arranged such that [when a braking force is transmitted the first set of engagement members drivingly engages the engaged gear wheel, and the second set of engagement members is in an unloaded condition, and when a driving force is transmitted the second set of engagement members drivingly engages the engaged gear wheel, and the first set of engagement members is then in an unloaded condition.]

Regarding Claim 33: THOMAS discloses a method for performing a kickdown shift in a transmission system including a first shaft, a first gear ratio having a first gear wheel rotatably mounted on the first shaft, a second gear ratio having a second gear wheel rotatably mounted on the first shaft, a selector assembly for selectively transmitting torque between the first shaft and the first gear wheel and for selectively transmitting torque between the first shaft and the second gear wheel, said selector being arranged to select from the following operational modes for the first and second gear wheels: lock the gear wheel for rotation with the first shaft in a clockwise direction and not lock in a counter-clockwise direction; lock the gear wheel for rotation with the

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first shaft in the counter\clockwise direction and not lock in the clockwise direction; and lock the gear wheel for rotation with the first shaft in the clockwise and counter-clockwise directions, including briefly interrupting torque in the transmission when a kickdown shift is required between the first and second ratios to enable the selector assembly to release the second gear wheel from rotation with the first shaft, and then selecting the first gear wheel.

Regarding the functional recitation(s) in the claim(s) above denoted by the “[]” the examiner notes while features of an apparatus may be recited either structurally or functionally, claims directed to >an< apparatus must be distinguished from the prior art in terms of structure rather than function. The reference discloses all the claimed structural limitations and therefore anticipates the claim. See MPEP 2114. Additionally, the apparatus is capable of performing the claimed functions.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 and 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over **THOMAS (US 3,780,840)**.

THOMAS discloses the claimed invention except for the backlash being less than or equal to four degrees when moving between acceleration and deceleration, and the engagement members (36 & 37) comprising three members. It would have been obvious to one of ordinary skill in the art at the time the invention was made to limit the

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backlash to such a range and to for the engagement members to have three members, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Claim 25 rejected under 35 U.S.C. 103(a) as being unpatentable over **THOMAS (US 3,780,840)** as applied to claims 1-6, 7-12, 14-19, and 21-23 above, and further in view of **THOMAS (US 4,098,380)**.

THOMAS _840 discloses a transmission system having resiliently deformable means (47) which are springs.

THOMAS _840 does not disclose the springs being disc springs.

THOMAS _380 teaches a transmission system having resiliently deformable means as disc springs (76)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the springs of THOMAS _840 to be disc springs in view of THOMAS _380 in order to save space within the transmission system, because disc springs occupy less axle space than coil springs allowing for a more compact, space-saving design.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over **THOMAS (US 3,780,840)** in view of **THOMAS (US 4,098,380)** as applied to claim 25 above, and further in view of **MILLER (US 4,241,818)**.

The combination of THOMAS - THOMAS discloses a disc spring within a transmission system.

The combination of THOMAS - THOMAS does not disclose the disc spring comprising a plurality of arms, each arm having a first part that extends circumferentially around a portion of the disc spring and a second part that extends substantially radially inwards.

Miller teaches a disc spring (42) having a plurality of arms (44), each arm having a first part that extends circumferentially around a portion of the disc spring and a second part that extends substantially radially inwards (see Fig. 3 of Miller).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the disc spring of the combination of THOMAS - THOMAS such that the disc spring would have arms in view of MILLER to achieve various spring characteristics.

Response to Arguments

Applicant's arguments filed 5/8/2008 have been fully considered but they are not persuasive. Applicant argues that the Thomas (US 3,780,840) reference was not capable of performing a downshift. Examiner disagrees; however the Thomas (US 3,872,737) reference which is now the primary reference in the case does disclose a method for down shifting in col. 6, lines 41-56).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEREK D. KNIGHT whose telephone number is (571)272-7951. The examiner can normally be reached on Mon - Thurs & every other Friday, 8am - 5pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles A. Marmor can be reached on (571) 272-7095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. D. K./
Examiner, Art Unit 3681

/CHARLES A. MARMOR/
Supervisory Patent Examiner, Art
Unit 3681